

## RADIO PAGING RECEIVER

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

The present invention relates to a radio paging receiver capable of reliably informing the user of a message having not been confirmed.

#### 2. Description of the Related Art

In the prior art radio paging receiver, when the receiver is paged by the base station, the receiver informs the user of this paging by an alert (e.g., an alert sound) and displays the received message. When the user carries out a operation for confirmation of the displayed message (e.g., pressing an alert reset switch), the alert stops. Therefore, if the user performs the confirmation operation in a dark environment to see a message, the message is determined to have been confirmed even though the user has not actually read the displayed message.

In addition, recently, there are many types of radio paging receiver. Especially, in the case of a paging receiver having a case or a cover which covers a display, if the user carries out the above-mentioned confirmation operation of a displayed message without opening such a case or cover when the paging receiver is paged, the displayed message is processed as a confirmed message even if the user cannot see the displayed message.

On the other hand, it is a common practice with another prior art paging receiver to inform the user, upon the pressing of a switch, of the existence of unconfirmed messages. Namely, the prior art paging receiver does not allow the user to know the existence of such an unconfirmed message unless the user presses the switch. Therefore, in the case where the paging receiver lacks illumination for display, when the user operates the paging receiver to see the unconfirmed messages, all the existing message are dealt with as confirmed messages even when the environment is too dark to see a message.

### SUMMARY OF THE INVENTION

It is therefore an object of the present invention to eliminate the above problems and provide a radio paging receiver which does not dispose of a message which could not be confirmed due to a dark environment.

Another object of the present invention is to provide a radio paging receiver which allows the user to be informed of the existence of an unconfirmed message, without pressing a switch, when the environment of the receiver changes from a dark condition to a light condition.

According to the present invention, the inventive radio paging receiver comprises:

a receiving section for receiving a radio signal containing a message signal;

photosensor means for detecting whether a message display environment is light or dark;

alert control means for generating an alert signal when the receiver is paged by received radio signal;

alerting means responsive to the alert signal for alerting an user of the receiver;

alert stopping means for stopping an alert signal generated by the alerting means when an alert stopping operation is executed by the user during the alert; and

message storing means for storing, if the photosensor means detects a dark condition when the alert stopping operation is executed, the received message in a memory as an unconfirmed message having not been confirmed by the user.

### BRIEF DESCRIPTION OF THE DRAWINGS

The above objects and features of this invention will become more apparent from the following detailed description when taken in conjunction with the attached drawings.

FIG. 1 is a block diagram of an embodiment of the receiver of the present invention;

FIG. 2 is a perspective view of the embodiment and showing the state in which the lid of the receiver is closed;

FIG. 3 is a perspective view of the embodiment and showing the state in which the lid of the receiver is opened; and

FIG. 4 is a flowchart showing the operation of the embodiment.

In the drawings, the same reference numerals denote the same structural elements.

### DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIG. 1, an embodiment of the present invention has a radio section 17 separated from the rest of the circuitry by a dotted line, and a control section 16 for controlling the receiving operation upon receiving the output of the radio section 17.

The radio section 17 has an antenna 1 for receiving a radio wave, and a receive section 2 for demodulating the received signal.

The control section 16 has a decoder 3 for decoding the demodulated signal, a 1-chip microcomputer 8 for controlling the entire operation of the paging receiver, a switch sensor 14 having an alert reset switch 141 for interrupting a CPU built into the 1-chip microcomputer and having a power source switch (not shown) for turning on a power source, a photosensor 151 for determining whether the message display environment is light or dark, a photosensor 152 for determining whether the environment of the receiver is light or dark, an alert driver 12, an LED (Light Emitting Diode) 9, a speaker 10, a vibrator 11 driven a motor to vibrate, and an LCD (Liquid Crystal Display) 13 for displaying a message.

The 1-chip microcomputer 8 has a PROM 4 storing a program and used to select an optional function, a RAM 5 for storing received messages, a CPU 6, and an LCD driver 7 for driving the LCD 13.

The LED 9, the speaker 10, and the vibrator 11 are driven by the alert driver 12 for informing the user of the reception of a message according to the selection of the user.

The physical structure of this embodiment is shown in FIGS. 2 and 3. In this embodiment a radio paging receiver is built into an electronic pocketbook having other functions, for example, a calculating function, a scheduler function, and a telephone number memory function. The pocketbook type paging receiver also has a lid 18 and a keyboard 19.

The photosensor 151 is provided for detecting whether the lid 18 is closed (FIG. 2) or opened (FIG. 3). Namely, if the photosensor 151 detects a light condition, the CPU 6 recognizes that the lid 18 is opened. When the lid 18 is closed, the